

WHAT IS CLAIMED IS:

1. A printing apparatus for forming a color image by applying different color inks to a printing material while bi-directionally moving the recording head to scan the recording material, said apparatus comprising:

changing means for changing an order of applications of the inks of different colors to be applied at least at one amount for printing a

secondary color to a secondary color pixel area; and

forming means for forming the secondary color while making the order of applications of the inks to at least one of a plurality of the secondary color pixel areas arranged along a predetermined direction different from the order of another, by said changing means.

2. An apparatus according to Claim 1, wherein said forming means forms the secondary color while changing by said changing means the order for substantially half number of the secondary color pixel areas arranged along the predetermined direction.

3. An apparatus according to Claim 1, wherein said recording head includes one or more sets of recording elements for application of the color ink, the recording elements constituting the set being

arranged in the scanning direction symmetrically, and
said changing means selects one of the recording
elements constituting the set to make the order of
applications of the inks to the pixel area different
5 from the order of another.

4. An apparatus according to Claim 3, wherein
said changing means includes print buffers for the
recording elements disposed symmetrically, which
10 selectively store print data for applying the ink from
a corresponding recording elements to change the order
of applications of the inks to at least one of the
secondary color pixel areas arranged in each raster
line.

15 5. An apparatus according to Claim 4, wherein
said forming means distributes the print data to the
print buffers on the basis of an image signal
corresponding to a color image to make the order of
20 applications of the inks to at least one of the
secondary color pixel areas arranged in each raster
line different from the order of another.

25 6. An apparatus according to Claim 5, wherein
said forming means distributes the print data randomly
to the print buffers on the basis of the image signal
corresponding to the color image.

7. An apparatus according to Claim 5, wherein said forming means distributes the print data alternately to the print buffers on the basis of the image signal correspondingly to the color image.

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8. An apparatus according to recording element, wherein said recording head includes recording elements for applying different color inks arranged in the scanning direction, and said changing means
10 changes the order of applications of the inks to the pixel areas by selecting a scanning direction of the recording head in which the ink is applied to the pixel areas.

15 9. An apparatus according to Claim 2, wherein the predetermined direction is a raster scan direction.

20 10. An apparatus according to Claim 2 or 9, wherein the predetermined direction is a direction of column.

11. An apparatus according to Claim 1, wherein the dots of different colors applied to the pixel area are at least partly overlapped with each other.

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12. An apparatus according to Claim 2, wherein a plurality of secondary color dots provided a certain

color ink and another color ink in different orders,
are allotted in the pixel area.

13. An apparatus according to Claim 3, wherein
5 said recording head has recording elements for
applying at least cyan, magenta and yellow inks, and
the recording elements for colors are disposed
symmetrically in the scanning direction with respect
to the recording element for another color.

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14. An apparatus according to Claim 13, wherein a
number of sets of recording elements at least for the
cyan, magenta and yellow is two.

15 15. An apparatus according to Claim 13 or 14,
wherein said recording head further includes a
recording element for applying black ink.

16. An apparatus according to Claim 12, wherein
20 the different color inks applied to the pixel area are
applied in a single scan of said recording head.

17. An apparatus according to Claim 12, wherein
the symmetric recording heads have recording elements
25 for applying different amounts of inks, which are
arranged alternately.

18. An apparatus according to Claim 12, wherein the symmetric recording heads have recording elements for applying different amounts of inks, which are arranged alternately in the opposite order.

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19. An apparatus according to Claim 12, wherein the different color inks applied to the pixel area are applied in scans of different directions of said recording head.

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20. An apparatus according to Claim 1, wherein said apparatus is operable in a first mode in which a relatively larger amount of ink is applied and a second mode in which a relatively smaller amount of ink is applied.

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21. An apparatus according to Claim 1, wherein a relatively larger amount of ink, a relatively smaller amount of ink and relatively larger and smaller amounts of inks are applied to the pixel area.

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22. An apparatus according to Claim 1 or 21, wherein the recording head ejects the ink by heat.

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23. A printing apparatus for forming a color image by application of different color inks to a printing material while bi-directionally moving the

recording head to scan the recording material, said apparatus comprising:

changing means for changing an order of applications of inks of different colors to be applied at least at one amount to form a process color in a process color pixel area; and

forming means for forming the process color by making an order of applications of the inks to at least of the secondary color pixel areas arranged in a raster one direction different from the order of another, by said changing means.

24. A printing apparatus for forming a color image by effecting scanning bi-directional movement of a recording head having recording elements corresponding to different color inks arranged symmetrically in a scanning direction and applying the color inks at different amounts, said apparatus comprising:

a plurality of print buffers corresponding to the recording elements arranged symmetrically; and

distributing means for distributing print data for a color to be printed to at least one of the print buffers on the basis of an image signal corresponding to the color image.

25. An apparatus according to Claim 24, wherein

said distributing means distributes alternately to at least one of said print buffers corresponding to the print data of the color to be printed.

5 26. An apparatus according to Claim 24, wherein said distributing means distributes randomly to at least one of said print buffers corresponding to the print data of the color to be printed.

10 27. An apparatus according to Claim 24, wherein distributing means distributes the print data to one or some of said print buffers when a level of the image signal is low, and distributes the print data to any one of said print buffers when the level of the
15 image signal is high.

20 28. A printing method for forming a color image by application of different color inks onto a printing material at different amounts while bi-directionally moving the recording head to scan the printing material, said method comprising:

25 a first step of application of ink of a certain color ink at least at one amount to form a secondary color to a secondary color pixel area; and
 a second step of application of different color inks to form the secondary color in the secondary color pixel area in an order of applications

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which is different from the order in the first step.

29. A method according to Claim 28, wherein the recording head includes two sets of recording elements for application of the color ink, the recording elements constituting the set being arranged in the scanning direction symmetrically, and said first step and said second step are carried out through one scanning motion of the recording head.

30. A print having a color image provided by different color inks, comprising:

a printing material;

a plurality of secondary color pixel areas arranged in a predetermined direction on the printing material;

wherein the plurality of pixel areas are printed by different color inks at least at one amount, and wherein an order of applications of the inks to at least one of the pixel areas is different from the order of another.